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First record of the sicklefin lemon shark (*Negaprion acutidens)* in the Chesterfield reefs (Coral Sea, Western Central Pacific)

by

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Résumé. – Première identification du requin citron faucille (*Negaprion acutidens*) sur les récifs des îles Chesterfield (mer de Corail, Pacifique ouest).

En novembre 2011, une mission sur les récifs des îles Chesterfield (mer de Corail, Pacifique ouest) a permis d'identifier la présence inédite de juvéniles de requin citron *Negaprion acutidens*.

Keywords. – Carcharhinidae - *Negaprion acutidens* - Chesterfield Islands - Coral Sea - Genetic connectivity - Remote atolls.

The sicklefin lemon shark *Negaprion acutidens* (Rüppell, 1837) is a widely distributed Indo-Pacific coastal shark that has been recorded on both sides of the Coral Sea, on the eastern coast of Australia and in New Caledonia (Compagno, 1984). The Chesterfield reef complex emerges in the middle of the Coral Sea, about 500 miles northwest of New Caledonia. This complex was formed by the Lord Howe ridge, which created an enormous atoll structure with a wide-open lagoon covering 3,500 km^2. Among the family of Carcharhinidae, previous surveys in the Chesterfield reefs identified four *Carcharhinus* species, the tiger shark *Galeocerdo cuvier* (Péron & Lesueur, 1822) and the blue shark *Prionace glauca* (Linnaeus, 1758) (Kulbicki *et al*., 1990).

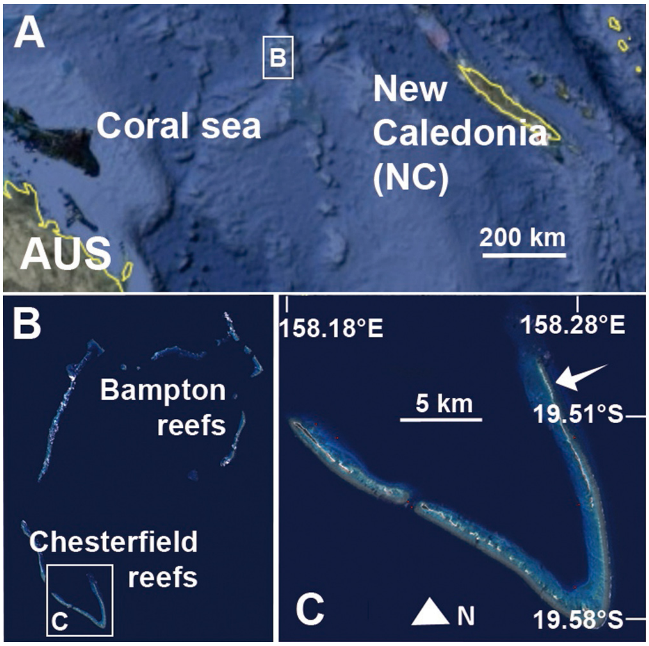

Figure 1. – The Chesterfield islands (A) lie in the Coral Sea with New Caledonia (NC) to the east and Australia (AUS) to the west. The atoll structure of the Chesterfield (B) includes a V shaped barrier reef in the South (C) where the juvenile lemon sharks were observed (arrow).

A scientific mission took place in the Chesterfield reefs in November 2011, which included a study on coastal sharks. This project included DNA sampling of juvenile Carcharhinidae that was implemented at the South of the Chesterfield atoll, where the coral barrier reef extends into a V shape structure (Fig. 1). In this area, the fringing reefs, which face the open ocean, include reef flats with shallow water (< 1 m depth) pools where juvenile sharks aggregate.

RESULTS AND DISCUSSION

During field sampling on 22 November 2011, six juvenile lemon sharks ranging from 60 to 80 cm of total length (TL) were observed and one was photographed (Fig. 2) in a pool at the southern end of the last islet on the barrier reef (19°51'42.05"S; 158°27'36.21"E) (Fig. 1C).

Lemon sharks share this nursery area with several blacktip sharks *Carcharhinus melanopterus* (Quoy & Gaymard, 1824) as it often happens for these two species (Mourier *et al*., 2013). These observations are the first records for this species in the Chesterfield reefs. While several fish surveys have been completed on the lagoon and reef slopes of the Chesterfield reefs since the 60s (Kulbicki *et al*., 1990) none of these surveys reported the presence of lemon sharks.

This finding is of interest as it provides additional opportunities to examine the spatial and genetic connectivity for large shark species across the Coral Sea (Werry *et al*., 2014). The absence of lemon shark observations in previous surveys could indicate an ongoing colonization process, as was recently observed at Palmyra Atoll in the Central Pacific (Papastamatiou *et al*., 2014). Such a process is also coherent with the fact that coastal *N. acutidens* likely uses South Pacific archipelagos as stepping stones for rare dispersal events between Australia and French Polynesia (Schultz *et al*., 2008), probably for mitigating the inbreeding effects among its populations (Mourier *et al*., 2013). Given the isolation of the Chesterfield reefs (see Fig. 1A) and even if inter-islands movements of juvenile lemon sharks have already been observed (Mourier *et al*., 2013), it is highly improbable that this colonization process could be based on the migration of juvenile animals and would rather involve at least one adult animal.

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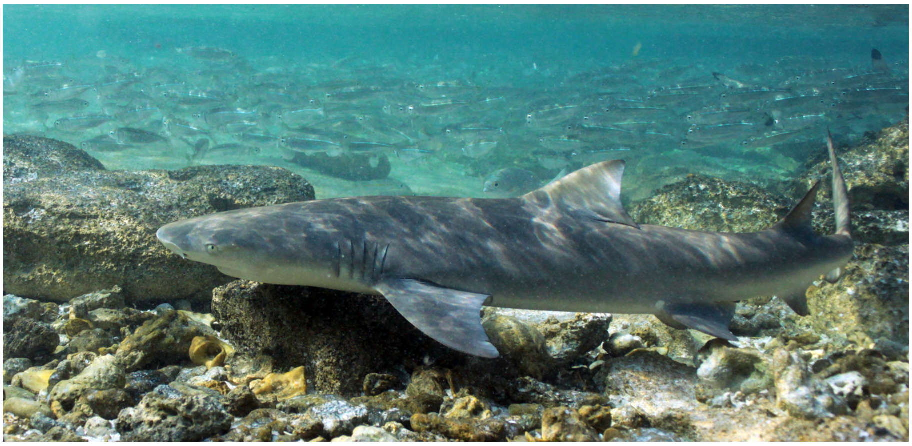

Figure 2. – Photography of a juvenile lemon shark identified as *Negaprion acutidens* with an estimated total length of 70 cm (Photo MI).

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